

ASME Boiler and Pressure Vessel Code”), 59.01-5;

(3) ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels (1998 with 1999 and 2000 addenda) (“Section VIII of the ASME Boiler and Pressure Vessel Code”), 59.10-5; 59.10-10; and

(4) ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications (1998) (“Section IX of the ASME Boiler and Pressure Vessel Code”), 59.10-5.

[USCG-2003-16630, 73 FR 65188, Oct. 31, 2008, as amended by USCG-2009-0702, 74 FR 49229, Sept. 25, 2009]

#### **§ 59.01-5 Repairs, replacements, or alterations.**

(a) No repairs, replacements, or alterations, except emergency repairs, shall be made to boilers, pressure vessels, their mountings or internal fittings, safety valves, piping systems, or pressure appliances without prior approval by the Officer in Charge, Marine Inspection.

(b) Emergency repairs, replacements, or alterations shall be reported as soon as practicable to the Officer in Charge, Marine Inspection, at or nearest the first port where the vessel may call after such repairs are made.

(c) Plan approval shall be obtained from the Officer in Charge, Marine Inspection, for all alterations to systems in service as listed in § 56.01-10(c) of this subchapter and those items listed in paragraph (a) of this section.

(d) Repairs, replacements, or alterations to machinery or items not covered by other sections of this part shall be made in a manner consistent with the part of this subchapter containing the construction standards for the item in question.

(e) Where applicable, manufacturers’ instruction books, manuals, and the like, and section VII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 59.01-2) must be used for guidance.

[CGFR 68-82, 33 FR 18887, Dec. 18, 1968, as amended by USCG-2003-16630, 73 FR 65189, Oct. 31, 2008]

### **Subpart 59.10—Welding Repairs to Boilers and Pressure Vessels in Service**

#### **§ 59.10-1 Scope.**

(a) Repairs to boilers or pressure vessels in service may be performed by welding provided the welding meets the applicable requirements of part 57 of this subchapter.

(b) No repairs by welding shall be made except temporary emergency repairs without prior approval of the Officer in Charge, Marine Inspection. Emergency repairs shall be replaced with permanent repairs meeting the requirements of this subchapter when the vessel returns to a port in which an Officer in Charge, Marine Inspection, is located except in the case of minor repairs which in the opinion of the Officer in Charge, Marine Inspection, do not materially affect the safety of the boiler or pressure vessel.

(c) Repair welding of power boilers, not meeting the requirements of subpart 52.05 of this subchapter, is prohibited unless the stress is carried by such other type(s) of construction complying with the requirements of this subchapter, and where the adequacy of the boiler design is not solely dependent upon the strength of the welds.

(d) Only welded repairs as specified in this subchapter are permitted on boilers and pressure vessels. The welding repairs allowed by this subpart apply only to boilers and pressure vessels fabricated of carbon steel. Welding repairs to boilers and pressure vessels fabricated of alloy steel will be given special consideration by the Commandant. Such other method of repairs by means of welding not covered in this subchapter shall be referred to the Commandant and may be authorized by him, if in his opinion, it meets the intent of this subchapter.

#### **§ 59.10-5 Cracks.**

(a) Cracks extending from the calking edge of plates to the rivet holes of circumferential joints may be welded provided the cracks are veed out so that complete penetration of the weld metal is secured.

(b) Circumferential cracks from rivet hole to rivet hole in girth joints may be welded provided there are not more

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than three consecutive cracked ligaments nor more than a total of six cracked ligaments in any one girth joint.

(c) Cracks in staybolted plates may be welded provided they are located entirely within staybolted areas and the total length of any crack or series of consecutive cracks does not exceed two staybolt pitches.

(d) Cracks in plain, circular or Adamson ring or similar type furnaces may be welded provided any one crack does not exceed 12 inches in length and after completion the weld is stress-relieved. Cracks in corrugated furnaces may be repaired by welding provided any one crack does not exceed 20 inches in length.

(e) Fire cracks may be welded at riveted door openings extending from the edge of the plate, but not more than 2 inches beyond the centerline of the rivet holes.

(f) Cracks may be welded between tube holes in the shell of water tube boiler drums, provided there are not more than two cracks in any one row in any direction, nor more than a total of four cracks in a drum, and further provided the welding meets the requirements of this subchapter for Class I welded pressure vessels and is approved by the Commandant.

(g) Cracks that occur in superheater manifolds, water wallheaders, water drums, sectional headers, and other appurtenances including steam manifolds of water tube boilers may be repaired in accordance with paragraph (h) of this section if the repair is approved.

(h) All cracks permitted to be repaired under this subpart shall be excavated to sound metal by grinding, flame or arc gouging or chipping out the defective metal to form a clean welding groove. The first two methods of excavation are preferable. Either a V groove or U groove wherein complete penetration of the weld metal is secured may be used. After excavation is completed and prior to welding, the excavated area shall be examined by magnetic particle, dye penetrant, or other acceptable test method. When the reverse side of the weld is accessible the root of the weld shall be chipped or ground out to insure a clean surface of the originally deposited

metal and the resultant groove welded to obtain a sound weld having complete penetration. When the weld cannot be back chipped because the reverse side is inaccessible, a backing strip or other approved means of assuring full penetration shall be employed.

(i) During welding of cracks a preheat shall be maintained by controlled temperatures. The degree of preheat shall be determined by the rules listed in accordance with the materials P-number groupings of PW-38, section I, Appendix R, section VIII and Table Q, 11.1, section IX of the ASME Boiler and Pressure Vessel Code (all incorporated by reference; see 46 CFR 59.01-2). For thicknesses exceeding three-fourths inch, suitable U grooves should be employed. A welding sequence shall be used so as to equalize welding stresses.

(j) Postweld heat treatment of repaired cracks shall be performed in accordance with the rules specified in PW-39, section I and UW-40, section VIII of the ASME Boiler and Pressure Vessel Code for boilers and pressure vessels respectively.

(k) Welded repairs of cracks shall be nondestructively tested in accordance with the rules specified in PW-40, section I, and UW-51, section VIII of the ASME Boiler and Pressure Vessel Code for boilers and pressure vessels respectively.

(l) After cracks originating in tube or rivet holes are repaired by welding, the holes shall be properly reamed and the weld reinforcing ground flush with the plate in way of rivet heads.

(m) Flat tube sheets in fire-tube boilers which have corroded or where cracks exist in the ligaments may be repaired by welding.

(n) Welding repairs to drums of power boilers, except as otherwise permitted in this subpart, are prohibited.

[CGFR 68-82, 33 FR 18887, Dec. 18, 1968, as amended by USCG-2003-16630, 73 FR 65189, Oct. 31, 2008]

### § 59.10-10 Corroded surfaces.

(a) Corroded surfaces in the calking edges of circumferential seams may be built up by welding to the original thickness under the following conditions:

(1) The thickness of the original metal to be built up between the rivet